

## 278 THE OPERATION OF LAND POWER PLANTS

as it is admitted when running on load, and it is better to run through the dinner hour and similar periods rather than to shut down the machines to save standby coal.

**Lubrication of Turbines.**—The lubrication of the modern steam turbine is almost entirely automatic.

The oil is circulated by means of a pump which is driven direct from the main shaft (fig. 13). This pump is usually of the rotary type, and often consists of two gear wheels. These pumps, simple and strong though they appear, are by no means free from trouble, and unless the

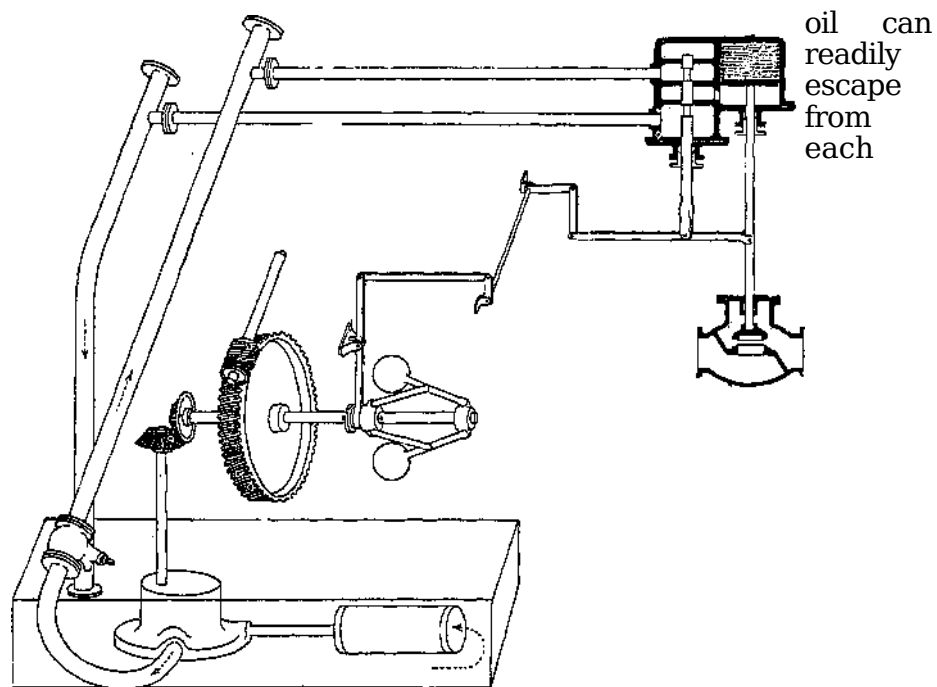


Fig. 13.—Diagrammatic Arrangement of Turbine Governor on relay system

individual tooth as the corresponding tooth of the other wheel engages with it, serious vibration may be set up on the pump shaft, causing the key-ways to strip, or the pump shaft to break.

There are many modifications of this rotary pump, but none, perhaps, are quite so simple as the one above described, and probably none are so free from trouble. An auxiliary oil-pump is usually fitted,

which is directly driven by steam. It is generally used when the turbine is started up and shut down, but it can be used for supplying the turbine bearings with oil under service conditions, in emergency. It may be mentioned that failure of the system of lubrication is serious, since the bearing liners may melt and consequently the turbine spindle may drop sufficiently to foul the fixed blading.

**Governors.**—The emergency governor is usually mounted directly on the end of the main turbine shaft (fig. 14). It consists of a ring, the centre of which has been bored out eccentrically, and the difference in the weight of the opposite sides of the ring is compensated for by means of a spring.

When a certain predetermined speed is reached, the centrifugal force